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## The acceptance and rejection of peers with ADHD and ASD in general secondary education

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### ABSTRACT

The authors focused on analyzing (a) peer acceptance and peer rejection of typically developing students, students with attention deficit hyperactivity disorder (ADHD), and students with autism spectrum disorder (ASD) in general secondary education; (b) attitudes of general secondary-aged students toward peers with ADHD and ASD; and (c) the relationship between peer acceptance/rejection and students' attitudes. A cross-sectional study was performed ( $n = 437$  typically developing students,  $n = 28$  students with ADHD/ASD; range = 12–15 years old). Students were asked to indicate with whom they prefer to hang out or preferably not want to hang out (peer acceptance and peer rejection). Attitudes were assessed using the Attitude Survey Toward Inclusive Education. Multilevel analysis showed significant differences between students with ADHD and ASD and typically developing peers on peer acceptance and higher on peer rejection. Second, typically developing peers showed neutral attitudes toward peers with ADHD or ASD. Third, the results showed that students' rejection and attitudes of peers significantly relate to each other.

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Including students with disabilities in general primary and secondary education is a much discussed issue. Recently, this discussion has been broadened, resulting in more attention for the social dimension in including these students in general education (Bossaert, Colpin, Pijl, & Petry, 2013; Koster, Nakken, Pijl, & van Houten, 2009). The social dimension is particularly noted in Article 24 of the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2006), and by signing the convention States agreed to create environments that maximize academic and social development, consistent with the goal of full inclusion. Up to now, 153 counties have signed, including the Netherlands. By signing, the representatives of each country have declared their intention to ratify the convention in near future.

In the early 1990s, the vast majority of students with different disabilities were educated in (secondary) special schools in the Netherlands (Meijer, Pijl, & Hegarty, 1997). However, over the last decade, changes in education policy have led to an increase of students with disabilities in general primary and secondary education in the Netherlands. The majority of these students have been formally diagnosed as having behavior problems, like attention deficit hyperactivity disorder (ADHD) or autism spectrum disorder (ASD; Ministerie van Onderwijs, Cultuur en Wetenschap, 2010).<sup>1</sup>

Both students formally diagnosed with ADHD and ASD show difficulties in their behavior, yet there are clear differences between both disability types. Students with ADHD can be characterized as showing inattentive, impulsive and hyperactive behavior. Students with ASD, on the other hand, experience

difficulties in communication, interaction and imagination (American Psychiatric Association, 2000). Although the behavioral difficulties manifest in different ways, both disability types result in social dysfunction (American Psychiatric Association, 2000). In the educational context, it has been found that students with behavioral challenges are more difficult to include than those with other disability types (House of Commons Education and Skills Committee, 2006). Their behavior is often unacceptable by teachers and peers (Brook & Geva, 2001), leading to an increased risk for bullying and social exclusion in class (Humphrey & Symes, 2010). Students with behavioral challenges are in an even more difficult position after entering secondary education (Humphrey & Ainscow, 2006). There are only few studies focusing on the social difficulties experienced by students with behavioral challenges in secondary education.

Pijl, Frostad and Flem (2008) compared the social status of students with different disability types (i.e., students with behavioral challenges, severe and mild learning disabilities, communication problems) in secondary education and concluded that students with behavior or communication problems are more at risk for social isolation than those with sensory or motor disabilities. In a study by Symes and Humphrey (2010), a comparison was made in peer acceptance and peer rejection of students with dyslexia, ASD, and typically developing students in secondary education. Compared to their typically developing peers, students with ASD showed higher levels of peer rejection and lower levels of peer acceptance.

Why students with ADHD and ASD are less accepted than their typically developing peers is unknown. It has been argued

that negative peer attitudes are major barriers in the acceptance of students with different types of disabilities in general education (McDougall, DeWit, King, Miller, & Killip, 2004). Increased attention has been given in research to the attitudes of typically developing students toward peers with different disorder types in general primary education over the last decade (see for example the literature study of De Boer, Pijl, & Minnaert, 2012). Three attitude components are often studied (Triandis, 1971), including cognitions, feelings, and behavioral intentions. Attitudes of typically developing students toward peers with ASD have been found to be neutral (Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Morton & Campbell, 2008). In influencing attitudes, different variables play a role. For example, it is known that students' attitudes are influenced by gender; girls tend to hold more positive attitudes than boys toward students with different disability types (Laws & Kelly, 2005; Siperstein, Parker, Bardon, & Widaman, 2007). Moreover, attitudes are influenced by the type of disability (Nowicki, 2006; Laws & Kelly, 2005). It has been argued that students' attitudes are least positive toward peers with behavior problems, such as ADHD and ASD (de Boer, Pijl, Post, & Minnaert, 2012). The outcomes which have been found for primary education students also have been found for secondary-aged students (Bossaert et al., 2011; Godeau et al., 2010; McDougall et al., 2004). Up to now, studies performed in secondary education did not specify the type of disorder (Bossaert et al., 2011; Godeau et al., 2010; McDougall et al., 2004), so it is unknown whether there are differences in students' attitudes toward peers with ADHD and ASD, or if there is a relationship between peer acceptance and peer rejection of students with ADHD and ASD and students' attitudes. It is likely that students who do not accept a peer with a disability hold more negative attitudes than their counterparts who do. Although the social dimension of students with different disabilities is a much-discussed issue in inclusive education, empirical evidence showing the relationship between acceptance and attitudes is again limited.

As stated previously, little is known about peer acceptance and peer rejection of students with ADHD and ASD in general secondary education. Knowledge is also lacking about attitudes of typically developing students and the relationship between their acceptance and attitudes toward students with ADHD and ASD. This cross-sectional study was set up to gather empirical data in research by answering the following research questions:

*Research Question 1: Is there a difference in peer acceptance and peer rejection between typically developing students, students with ADHD, and students with ASD?*

*Research Question 2: What attitudes do typically developing students in general secondary education hold toward peers with ADHD and ASD and what variables relate to their attitudes?*

*Research Question 3: Is there a relationship between peer acceptance/rejection of students with ADHD and ASD and the attitudes of students in general secondary education toward peers with ADHD and ASD?*

It was hypothesized that students with ADHD are least accepted and more rejected compared to typically developing

students and students with ASD. Moreover, it was hypothesized that typically developing students hold the most negative attitudes toward peers with ADHD and that there is a relationship between peer acceptance, peer rejection, and attitudes.

## Method

### Procedure

The study was conducted in Dutch general secondary schools. In drawing up the study sample the schools had to meet the following criterion: the first or second grade (U.S. Grades 7 and 8; age range = 12–14 years old) included at least one student with a formal diagnosis of ADHD or ASD such as pervasive developmental disorder not otherwise specified (PDD-NOS).

Twenty-five general secondary schools were invited to participate in the study, of which seven schools gave their consent to participate and also met the selection criterion. Some schools indicated they had more than one first or second grade (U.S. Grades 7 and 8) meeting the inclusion criterion. Thus, the total sample consisted of 18 classes.

After schools gave their consent to participate, students' mentor teachers were contacted to ask students to complete a computer based, self-report survey during their weekly mentor lessons. All teachers agreed to do this and gave their consent for the study. The teachers received a list with the names of all students and a personal login code for each student. After logging-in, students were given information about the survey such as the aim of the research, anonymity of participant, and an example of items and answer categories). All students completed the survey individually, which took about 30 min.

### Participants

Data were collected from a sample of 18 classes, consisting of a total sample of 465 secondary-aged students (age range = 12–14 years old;  $M = 13.2$  years,  $SD = 0.8$  years). A small majority of the sample were girls (52%). A total number of 28 students with ADHD or ASD were part of the sample ( $n_{ADHD} = 14$ ,  $n_{ASD} = 14$ ). These students were formally diagnosed in the past, according to the criteria of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed., Pincus & Frances, 2002). The majority of students formally diagnosed with ADHD and ASD were boys (75%). Fifty-one per cent of the students attended first grade, the other 49% were in second grade. The Dutch secondary education system is divided into different education levels: lower secondary, vocational, and higher education. In the present study, 25% of students attended lower secondary schools, 16% vocational, and 59% higher secondary schools.

### Measures

#### Peer acceptance and peer rejection

In order to answer the first research question, we used the nomination procedure to examine students' peer acceptance and peer rejection. This procedure is frequently used to assess acceptance by classmates and is valid for students in early secondary education as well (Bukowski, & Hoza, 1989). We used two positive and two negative formulated questions to obtain

information about peer acceptance and peer rejection. Students were asked to answer the following four questions: (a) with whom do you like to hang out?; (b) with whom would you rather not want to hang out?; (c) with whom do you want to work together on a classroom assignment?; and (d) with whom would you rather not want to work together on a classroom assignment? There was no restriction made on the number of nominations. The number of nominations each student received (based on levels of positive or negative agreement) was used as dependent variable for the analyses on peer acceptance and peer rejection. This means that the range of scores was between zero and the number of students per class, minus one.

### Class size

As the number of students per class might influence the total number of received nominations, we included class size as a control variable in the analyses for peer acceptance and peer rejection. The average class size of the total sample was calculated and used as a reference point in the analyses ( $M = 16.6$  students).

### Disability

To compare peer acceptance and peer rejection of typically developing students and students with ADHD or ASD we included the formal diagnoses in the analyses.

### Attitudes

To answer the second research question, we used the Attitude Survey Toward Inclusive Education (ASIE) to examine students' attitudes. This survey was constructed and psychometrically tested in a study by De Boer, Timmerman, Pijl, and Minnaert (2012). The item quality of the survey was analyzed using the Mokken model (Mokken, 1971), a model based on item response theory. The outcomes of the analysis resulted in a satisfactory scalability coefficient ( $H = 0.50$ ) and a good reliability coefficient ( $\rho = 0.92$ ). For the present study, the Cronbach's  $\alpha$  was .89.

The ASIE consisted of a vignette and statements about attitude. The vignette described a hypothetical student with a formal diagnosis (see the Appendix). Based on the population of students with disabilities in our study, we developed two different vignettes in which gender-differences were taken into account: Mark/Nelly—a student with ADHD and Alex/Sandra—a student with PDD-NOS. The vignettes were drawn up by the first author and verified by an administrator with a degree in special education. Students randomly received a survey corresponding with their gender, including one of the vignettes. After reading the vignette, students were asked to answer 14 attitude statements. One example of an item was "I would invite Mark to my birthday party." Students indicated their degree of agreement with this by means of a 4-point Likert-type scale ranging from 1 (*totally disagree*) to 4 (*totally agree*) in which a higher score reflected a more positive attitude.

### Background variables

The survey included demographic questions like gender, grade, education level of the students (see Participants section) and any acquaintance with someone with a disability. Based on

previous research, the most relevant variables were included in the analyses (e.g., gender, grade, educational level).

### Accepting/rejecting a peer with ADHD or ASD

To answer the third research question, we established whether students nominated their classmate with ADHD or ASD in the peer acceptance and peer rejection questions. Based on this outcome we created a dichotomous variable indicating peer acceptance or peer rejection (0 = no acceptance/no rejection, 1 = acceptance/rejection).

### Analysis

We started by analyzing the sociometric data using the program UCINET 6 (Borgatti, Everett, & Freeman, 2002), which is designed to analyze social-network data. By means of students' nominations, the program calculates the total number of nominations received for the peer acceptance and peer rejection questions. This information was added to the dataset in order to answer the first research question.

We performed multilevel regression analyses to answer all three research questions. Because we were dealing with hierarchically nested data (students in classes in schools), a general linear regression model could not be used (Snijders & Bosker, 1999), so multilevel modeling was preferred. In this kind of analysis, variables at different levels like school, class and student level are distinguished. We used the program MLwiN 2.23 for this (Rasbash, Steele, Browne, & Prosser, 2005), which is specifically developed to analyze hierarchical data.

The analyses were performed in three steps: analyzing (a) students' peer acceptance and peer rejection, (b) students' attitudes and the variable effects on attitudes, and (c) the relationship between peer acceptance and peer rejection and students' attitudes. We executed a random intercept model and started by executing an empty model (a model without any explanatory variables) in which we distinguished three different levels (i.e., students/classes/schools). It appeared that there was no variance at school level (i.e., no differences were found between schools), that may be explained by the small number of schools who participated in the study. This resulted in a final model with two levels: classes at Level 2 and students as Level 1. We then performed univariate analyses (for each variable separately) to explore which independent variables were most relevant to include in the final models. Variables showing a significant effect on the dependent variables (i.e., peer acceptance, peer rejection, and students' attitudes) were included in the final model. If required, post hoc analyses were performed to establish possible differences between groups (e.g., between students with ADHD and ASD). In all the models we considered a  $p$  value of .05 as statistically significant.

In multilevel analysis the deviance (statistic to indicate the goodness of fit of the model) is used to examine whether models improved significantly or not. A chi-square test was used to test if a model improved significantly, with the number of degrees of freedom equal to the number of extra variables in the model with the most variables. This procedure was applied for each dependent variable (i.e., peer acceptance, peer rejection, and student attitudes).



**Table 1.** Descriptive statistics of peer acceptance and peer rejection of typically developing students, students with ADHD, and students with ASD.

	Typically developing students ( <i>n</i> = 437)				Students with ADHD ( <i>n</i> = 14)				Students with ASD ( <i>n</i> = 14)			
	<i>M</i>	<i>SD</i>	Min.	Max.	<i>M</i>	<i>SD</i>	Min.	Max.	<i>M</i>	<i>SD</i>	Min.	Max.
Peer acceptance												
"With whom do you like to hang out?"	5.36	2.66	0	13	3.75	2.86	0	8	4.33	3.87	0	12
Peer rejection												
"With whom would you rather not like to hang out?"	3.94	3.89	0	19	8.33	6.77	1	23	6.17	4.72	0	15

## Results

### Peer acceptance and peer rejection of typically developing students, students with ADHD, and students with ASD

Preliminary analyses showed that the correlation between the two peer acceptance and the two peer rejection questions was highly significant, 0.64 and 0.83 respectively. Based on this outcome, we decided only to use the questions "with whom do you like to hang out/with whom would you rather not like to hang out" for further analysis.

With respect to peer acceptance, descriptive statistics showed that typically developing students received most positive nominations, compared to those with ADHD or ASD. As shown in Table 1, students with ADHD received the lowest number of positive nominations on the positive question. With respect to peer rejection, the results showed that students with ADHD received twice as many nominations compared to their typically developing classmates ( $M = 3.94$  vs.  $M = 8.33$ ). However, the large standard deviations show that on an individual level there was a lot of variation between peer acceptance and peer rejection of students with ADHD and ASD.

Executing the multilevel analyses with peer acceptance as dependent variable revealed that students' peer acceptance largely varied between students (73.7% of the total variance). It also appeared that there was an overall significant effect with type of disorder ( $p < .05$ ). Post hoc analysis revealed that students with ADHD received significantly

fewer nominations compared to their typically developing students,  $\chi^2(1, N =) = 4.05, p = .04$ . There was no significant difference between students with ASD and typically developing students,  $\chi^2(1, N =) = 3.54, p = .06$ ; and between students with ADHD and students with ASD,  $\chi^2(1, N =) = 0.01, p > .05$ . Neither an effect of gender nor an effect of interaction was found between gender and type of disability. As expected, the number of students per class did affect peer acceptance, indicating that students in larger classes generally receive more nominations. Comparing the empty model with the final model indicated a significant improvement of the model,  $\chi^2(4, N = 453) = 67.49, p < .001$ . See Table 2 for more detailed statistical information.

The empty model for peer rejection also showed a large variation between students (85.8% of the total variance). Including the type of disability in the model revealed that students with ADHD received significantly more nominations for peer rejection than typically developing students,  $\chi^2(1, N =) = 12.79, p < .001$ . The difference between students with ASD and typically developing students was also significant,  $\chi^2(1, N =) = 3.71, p = .05$ . No difference in peer rejection was found between students with ADHD and students with ASD,  $\chi^2(1, N =) = 1.44, p = .10$ . A significant difference between boys and girls was found, indicating that, overall, girls received significantly less negative peer nominations than boys. No interaction effect between gender and type of disability was found. Moreover, no effect of class size was found on peer rejection. Comparing the empty model with the final model

**Table 2.** Model estimates for the variable effects on peer acceptance and peer rejection.

Model	Peer acceptance				Peer rejection			
	Empty model		Final model		Empty model		Final model	
	Coefficient	SE	Coefficient	SE	Coefficient	SE	Coefficient	SE
Fixed part								
Intercept	5.08	0.35	3.54	0.73	4.16	0.40	4.33	0.99
Disability								
No disability (ref.)								
ADHD			−1.32	0.65**			3.64	1.02**
ASD			−1.22	0.65			1.95	1.01
Gender								
Male (ref.)								
Female			−0.19	0.23			−0.80	0.36**
Class size			0.19	0.07**			0.00	0.1
Random part	Variance	SE	Variance	SE	Variance	SE	Variance	SE
Class level	1.99	0.74	1.37	0.53	2.35	0.97	2.37	0.97
Student level	5.59	0.37	5.51	0.37	14.25	0.95	13.41	0.91
Deviance	2161.32		2093.83		2584.71		2491.70	

\* $p < .05$ .

**Table 3.** Comparison of descriptive statistics per type of vignette of several attitude statements.

Statement	Total				ADHD				ASD			
	<i>M</i>	<i>SD</i>	% pos.	% neg.	<i>M</i>	<i>SD</i>	% pos.	% neg.	<i>M</i>	<i>SD</i>	% pos.	% neg.
I would like to have Mark as my friend.	2.29	0.92	32	68	2.14	0.96	34	66	2.43	0.87	49	51
I would like to do a school project with Mark.	2.28	0.96	42	58	2.05	0.96	31	69	2.49	0.92	53	47
I would like to spend time with Mark.	1.89	0.96	28	72	1.76	0.93	25	75	2.00	0.98	32	68
I would stick up for Mark if he was being teased.	2.98	0.85	76	24	2.94	0.88	75	25	3.02	0.81	77	23
I would invite Mark for a sleepover at my place.	1.94	0.92	27	73	1.87	0.90	25	75	2.00	0.94	29	71
I would keep Mark company during recess.	2.37	0.94	45	55	2.28	0.94	43	57	2.45	0.93	47	53

indicated a significant improvement of the model,  $\chi^2(4, N = 453) = 93.01, p < .001$ . See Table 2 for more detailed statistical information.

### Students' attitudes toward peers with ADHD and ASD

As can be seen in Table 3, descriptive statistics showed that the students' mean attitude score was 2.40 ( $SD = 0.56$ ). Students held less positive attitudes toward peers with ADHD ( $M = 2.30, SD = 0.57$ ) compared to peers with ASD ( $M = 2.49, SD = 0.53$ ). Overall, the most positive response was given on the statement asking whether students would stick up for Mark/Alex if either were being teased. The least positive response was given to the statement asking whether students would invite Mark/Alex for a sleepover.

Executing the multilevel analyses with the attitude score as dependent variable revealed that there was a significant variation between students' attitudes (90.3% of the total variance). Including grade, education level, and an acquaintance with someone with a disability in the model revealed no significant effect of these variables on students' attitudes scores. Hence, no further attention will be given to these variables. Adding the variables gender and type of vignette, however, did reveal significant effects. The results showed that, overall, girls held significantly more positive attitudes

than boys. Moreover, students' responses were significantly more positive toward the vignette describing a student with ASD than toward the student with ADHD. Comparing the empty model with model 1 revealed a significant improvement of model 1,  $\chi^2(2, N = 405) = 32.56, p < .001$  (see Table 4).

### The relationship between peer acceptance/rejection and students' attitudes

To establish whether peer acceptance or peer rejection related to students' attitudes, we expanded model 1 by including the variable acceptance/no acceptance, rejection/no rejection (see Table 4, final model). No effect of the variable peer acceptance on students' attitudes was found. However, a significant negative effect was found for peer rejection. This indicates that students who reject a classmate with ADHD or ASD (i.e., they indicated not wanting to hang out with a classmate with ADHD or ASD) hold more negative attitudes than students who did not show this rejection. Comparing the final model with the empty model and model 1 with the empty model revealed a significant improvement of the final model,  $\chi^2(4, N = 392) = 55.73, p < .001$ ;  $\chi^2(2, N = 392) = 23.17, p < .001$ .

**Table 4.** Model estimates for the variable effects on students' attitudes.

Model	Empty model		Model 1		Final model	
	Coefficient	<i>SE</i>	Coefficient	<i>SE</i>	Coefficient	<i>SE</i>
Fixed part						
Intercept	2.39	0.05	2.18	0.06	2.20	0.07
Gender						
Male (ref.)						
Female			0.23	0.05 **	0.27	0.05 **
Type of vignette						
ADHD (ref.)						
ASD			0.19	0.05 **	0.19	0.05 **
Peer acceptance of student with disability						
No (ref.)						
Yes					0.04	0.07
Peer rejection of student with disability						
No (ref.)						
Yes					-0.14	0.06*
Random part	Variance	<i>SE</i>	Variance	<i>SE</i>	Variance	<i>SE</i>
Class level	0.03	0.01	0.03	0.01	0.03	0.01
Student level	0.28	0.02	0.26	0.02	0.26	0.02
Deviance	658.49		625.93		602.76	

\* $p < .05$  \*\* $p < .01$ .

## Discussion

This study was set up to obtain more knowledge about the peer acceptance and peer rejection of students with ADHD and ASD in general secondary education. Moreover, we aimed to assess attitudes of typically developing students toward peers with ADHD and ASD and the relationship between peer acceptance/rejection and students' attitudes.

With respect to the first aim, this study showed that students with ADHD were least accepted by their peers in class. Moreover, students with ADHD were more rejected. No significant difference was found in acceptance between students with ASD and typically developing students ( $p = .06$ ), although the difference in peer rejection was ( $p = .05$ ). Considering the increased diagnosed prevalence of ADHD in the last years (see Batstra & Frances, 2012), our study shows a worrying outcome: being socially included is not obvious for students with ADHD and ASD in secondary general education.

Previous studies on the inclusion of students with disabilities in general education focused on peer acceptance rather than on peer rejection (Chamberlain, Kasari, & Rotheram-Fuller, 2007; Koster et al., 2010; Wendelborg & Tøssebro, 2011), so we decided to use both positive and negative formulated nomination questions. After all, receiving few nominations on a positive formulated question only indicates poor acceptance. Yet, it does not indicate whether peers actually reject students with ADHD and ASD. The results clearly show that students with ADHD and ASD are rejected by their peers in class: they received twice as many nominations on the negatively formulated question than on the positively formulated one. Due to ethical issues (e.g., negative emotional reactions of students, see Mayeux, Underwood, & Risser, 2007), peer rejection is hardly examined in the field of inclusive education so far. However, neglecting the possible negative social position of students, by only assessing peer acceptance, seems to be even more harmful and unethical.

An interesting effect of gender was found for peer rejection. Girls generally received fewer nominations on the negative formulated question. There is a clear notion about sex differences in peer relationships, like the tendency of children to interact primarily with same-sex peers (Fabes, Martin, & Hanish, 2003). Based on this notion and the outcomes of the present study, it can be hypothesized that girls tend to reject girls less often. Unfortunately, a limitation of this study was the small sample size through which we could not establish whether girls and boys differed in their rejection of peers with behavioral challenges. This would be an interesting hypothesis to test in future research.

The second aim of the study focused on attitudes of typically developing students toward peers with ADHD and ASD. In previous studies the general term *disability* has often been used in attitude surveys. Using this method makes it impossible to assess whether students' attitudes differ according to the disability type. The current study specifically focused on attitudes toward students with ADHD and ASD using vignettes and showed that students held least positive attitudes toward students with ADHD, when compared to peers with ASD.

Taking the outcomes of the first and second aim together it can be concluded that students with ADHD particularly experience difficulties in being socially included in general secondary

education. As very little is known about the causes of this, the third aim focused on exploring the relationship between acceptance/rejection and attitudes. Remarkably, no relationship between acceptance and attitudes was found, but we did find that rejection and attitudes related to each other. As it is believed that attitudes of typically developing students play a significant role in including students with disabilities socially, much focus has been given to this in the last years. This resulted in the development and evaluation of disability awareness programs to influence attitudes positively which in the end should lead to more positive social inclusion. However, small positive effects of these programs on attitudes have been found (Bell & Morgan, 2000; Godeau et al., 2010) and effects on social acceptance have not even been measured yet. Taking the weak relationship between attitudes and social acceptance/rejection into account (see Table 4, final model), it is possible to question whether disability awareness programs lead to better social inclusion.

Due to a lack of including background variables, the effect of several variables on class and student level could not be examined. For example, it was unknown since when students were each other's classmates. This means that the student with challenging behavior could have been a classmate for quite some years, perhaps already since primary school. In such a case, it could be that there was already a downward spiral regarding students' acceptance. To establish this possible effect, it is recommended that this variable be included in future research. Another limitation of the present study was the composition of the sample. The sample only consisted of students with experience, as there was no comparison group included in the study. It has been found that experience with someone with a disability positively influences attitudes (Allport, 1954) and perhaps their acceptance as well. This may indicate that the attitudes of the students in our sample may present a biased picture, which should be taken into account when interpreting the results. Another limitation of our study was the omission of the effect of teacher variables on students' attitudes, such as the effect of teacher training. It has been found that teachers with more training in special needs hold more positive attitudes than teachers without training (Avramidis & Kalyva, 2007; Lifshitz, Glaubman, & Issawi (2004). It seems rational that positive attitudes of teachers result in more positive attitudes among students and, in the end, in a more positive inclusion of students with disabilities. This is still an unanswered question.

Based on the outcomes of this study we underline the importance of peers in the social inclusion of students with disabilities in general classrooms. This also has been stated by Pijl, Frostad and Mjaavatn (2014), who concluded that peer support strongly predicts the intention to leave school early. Thus, having a supportive social network helps students with disabilities to be included in general classroom. Supporting students' social network can be done by implementing a peer buddy program (Hughes & Carter, 2008). Research has showed positive effects of such a program on both students with and without disabilities (Carter & Kennedy, 2006; Cushing & Kennedy, 1997), indicating a win-win situation. Studies on peer buddy programs primarily focused on students with intellectual and severe disabilities (Carter & Hughes, 2005), whereby it is unknown what the effects are for students with challenging behavior.



Our study stresses the importance of focusing on social inclusion of students with challenging behavior in general secondary education. These students experience difficulties in peer acceptance and are often rejected by peers in class. The increased attention given on attitudes in the last decade in the field of inclusive education suggests its relevance, which is underlined by our study. Attitudes do matter, especially in the rejection of students with challenging behavior. To diminish negative attitudes among students, positive learning environments should be created by teachers, allowing students to interact with disabled peers. Teachers should be creative in stimulating interaction between students, for example in decreasing physical distance between students using different forms classroom seating arrangements. This relatively simple intervention has been studied by Van den Berg, Segers and Cillessen (2012). Their study showed that students who were perceived most negatively at the start of the intervention received more likeability ratings after the intervention (i.e., decrease in distance between students). Changing seating arrangements may be a first step to stimulate students' interactions, whereby negative attitudes can be diminished.

In sum, this study shows that the goals of inclusive education are often not met for students with challenging behavior. Including students with ADHD and ASD in general secondary classrooms does not automatically lead to acceptance by peers. Hence, detecting the vulnerable social position at early stage is an important task for teachers, through which interventions can be implemented as soon as possible so negative effects can be minimized.

## Note

1. Avoiding categorizations with negative connotations, the term *behavioral challenges* is used, which refers to students with ADHD and students with ASD.

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## Appendix: Vignette used in the attitude survey toward inclusive education

### Mark: A boy showing characteristics of ADHD

Mark is a boy of your age and has just moved to your town. He then attends the same school as you. Mark is very noisy, he has difficulty staying in his place and walks about the classroom a lot. He also has difficulty in listening, calls out and often speaks out of turn. He has trouble working together with other children and wants to do everything his way. Mark likes playing football and he's quite good at it. Also, when Mark is angry he starts to shout, throws stuff and often leaves the classroom.

### Sandra: A girl showing characteristics of PDD-NOS

Sandra is a girl of your age and has just moved to your town. She then attends the same school as you. Sandra feels excited to move, because new things often frighten her. She has difficulties in making friends and wants to do everything her way. If things change suddenly, Sandra can get angry. She can be quickly tempered and then often hits and stomps. Sandra can work independently in the class and likes playing games with others.